$$PE_z(P_k) = PE_i(P_k)$$

$$PE_i(P_k), PE_j(P_k), P_k$$

$$PE_i(P_k) = PE_j(P_k)?$$

$$PE_i(P_k) \qquad PE_j(P_k)$$

$$PE_1, PE_2, ..., PE_N$$

SAMPA

$$PE_{z1}(P_1), PE_{z2}(P_2), ..., PE_{zk}(P_k), ..., PE_{zm}(P_m),$$

$$k = 1 ... M$$

FIG. 1

1 ℓ-d. phoneme (37)	$9_f, 9_g, @_p, D_s, E{:}_g, G_s, H_f, J_i, L_i, L_p,$ $O_g, SS_i, Y_g, Z_i, a{:}_g, bb_i, d_g, dd_i, e{\sim}_f,$ $e{\sim}_p, gg_i, h_g, i{\sim}_p, j{\sim}_p, k_g, \ell_g, ll_i, l{\sim}_p,$ $mm_i, pp_i, r_g, u{\sim}_p, w_f, w_p, y_f, y{:}_g, z_s$
2 ℓ-d. phonemes (39)	$2_f + 2{:}_g, 9{\sim}_f + 6{\sim}_p, E_i + E_g, J_f + JJ_i, J_s + J_p,$ $L_s + LL_i, N_s + N_g, O_p + O_i, S_g + S_f, S_i + S_s,$ $S_p + C_g, T_s + ff_i, Z_p + Z_f, a_p + a_g, a{\sim}_f + O{\sim}_p,$ $b_g + p_i, b_i + b_s, b_p + b_f, d_p + d_f, d_s + d_i,$ $e_p + e{:}_g, g_p + g_f, g_s + g_i, j_i + j_g, j_s + j_f,$ $k_i + g_g, n_p + nn_i, o_f + U_g, o{:}_g + o_p, o{\sim}_f + w{\sim}_p,$ $rr_i + rr_s, ss_i + z_g, u_p + u_f, v_f + v_p, v_i + B_s,$ $w_i + v_g, w_i + w_s, x_g + R_f, x_s + R_p$
3 ℓ-d. phonemes (9)	$@_g + @_f + 6_p, a_s + a_i + a_f, j_p + I_g + e_f,$ $o_s + o_i O_f, r_s + r_p + r_i, t_g + t_i + t_s,$ $tt_i + t_f + t_p, u_s + u_i + u{:}_g, z_i + z_p + z_f$
4 ℓ-d. phonemes (5)	$e_s + e_i + E_f + E_p, kk_i + k_p + k_f + k_s, \ell_g + l_s + l_i + l_f,$ $n_s + n_i + n_g + n_f, p_p + p_f + p_g + p_s$
5 ℓ-d. phonemes (4)	$f_i + f_s + f_g + f_f + f_p, i_s + i_i + i{:}_g + i_p + i_f,$ $m_s + m_i + m_p + m_f + m_g, s_s + s_g + s_i + s_f + s_p$

FIG. 2